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SPECIAL REPORT: The Plight of the Brazilian User

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ADVANCED TECHNOLOGY GROUPS

Corporations Bet on Teams With the Right Stuff To Explore Technology Frontiers

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Users Await Fruitful DEC/Apple Yield

Database Machines: The Least-Cost Route?

Can IBM Revive the RT PC?

Private Networks: The End of an Era?

Sales Force Automation Is More Than Laptops

NOV 1, 1988

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DATAMATION

FOR MANAGERS OF INFORMATION TECHNOLOGY WORLDWIDE

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Cover Photography by Walter Wick

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Improvement: A Constant Challenge

Form has always followed function at DATAMATION. From its inception in 1957, the magazine has served but one function: to help managers of information technology use software, systems, and communications tools, as well as related services, to their organizations' fullest advantage. However, the form in which DATAMATION's editors have chosen to deliver that benefit has by necessity changed with the times. Whenever readers have indicated they have new or different informational needs, the magazine has responded quickly—increasing its frequency, adding more case histories, broadening its international perspective, etc.

So it should hardly come as a surprise to you to see that with this issue, DATAMATION initiates a redesign aimed at better fulfilling its purpose—helping you. Some changes are more obvious than others—our logo is different, this column is new, opinions are more numerous, articles are more plentiful. But I urge you to pay attention to all of them, especially our Information Economics department, and let us know what you think of our progress. You can use the card opposite this page, call me at (212) 463-6431, fax me at (212) 242-6987, send an MCI mail message to DATAMATION/T. Mead, or write to me at 249 W. 17 St., New York, NY 10011.

THE REDESIGN TEAM: Lascaro, Hallock, Walker, Montalbano, and Stern.

The redesign process did not begin at a particular spot or at a particular time. It has been an ongoing pursuit at the magazine during its entire 31 years. Editors have constantly engaged in reader research—qualitative and quantitative—to determine whether DATAMATION delivers the right information in the best possible way to its audience. What has been found in recent years is an increasing tendency among IS executives at user organizations to distinguish DATAMATION as their chief source for in-depth, analytical stories about technologies and the management of them. Given this trend, it only made sense for us to examine whether the design of the magazine was enabling DATAMATION to fulfill its role as best as possible.

The role itself came under intense scrutiny before the redesign was undertaken. In early June, the magazine's editors invested a week of their time to decide DATAMATION's precise editorial mission. They agreed, remarkably, that DATAMATION was right on target with the direction it had embarked on a year earlier: focusing on the five greatest challenges facing its readers:

—Implementing new technologies
—Managing personnel inside and outside the IS organization
—Connecting dissimilar systems
—Protecting existing investments in technology
—Understanding where information technology fits in their core businesses.

Once we determined there was a better way to deliver information to you, the task of actually redesigning DATAMATION fell to six talented individuals. Barrie Stern, James Montalbano, and Bob Lascaro focused on the creative aspects of the redesign, while Hernalee Walker, Gary Hallock, and Harris Salat worried about implementing their efforts on our Atex text processing system. We trust you will be satisfied with their efforts.

Again, please share your thoughts with us.

Tim Mead

—Tim Mead, Editor-in-Chief

DATAMATION

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Can IBM Revive The RT PC?

The RISC-based system has attracted few users so far, but Big Blue is expected to add capabilities early next year that could improve its life expectancy.

BY SUSAN KERR

Ever since its debut almost three years ago, IBM's RT system has been a computer in search of users.

Initially, heralded as a system destined to become a standard, the RT has failed to deliver. Instead, it is more notable today for its long list of product firsts for IBM: it's the first standalone system for computer aided manufacturing and engineering, the first product based on RISC technology, and the first significant product supporting Unix. Even with the enhancements that are expected in early 1989, observers still wonder whether the RT will ever live up to its technical promise and find happiness in the IBM product portfolio.

The expanding market acceptance of RISC and Unix should mean a new life for the RT, since IBM has become vocally aggressive with both technologies. This summer, it contacted competitors and warned them of potential infringement of its RISC patents. It has also announced that it will run Unix across a full range of products, including its high-end PS/2 microcomputers, and it is a cofounder of one Unix standards group, the Open Software Foundation.

Moving to Micro Channel

The new systems that IBM is expected to announce in the first half of 1989 should clear up what users term the number one technical constraint on the RT: the 32-bit systems' use of the old 16-bit AT bus. By moving to the 32-bit Micro Channel Architecture, the I/O structure made famous by the PS/2 family, faster I/O and file devices can be attached to the RT. In addition, IBM may introduce a version of the RT with both built-in RT RISC and 80386 processors. IBM currently offers an AT coprocessor option for the RT.

The absence of a 32-bit bus on what is supposed to be a technical workstation is one example of the RT's skittish nature. To date, IBM has appeared hesitant in its marketing and design of the RT. The product has been too underpowered and overpriced to compete on an equal footing with other CAE and CAD/CAM workstations.

No longer. Art Goldberg, IBM's director of business development AIX systems in the personal systems line of business, admits that Big Blue announced the original RT knowing that there were gaps in the product, but he promises that IBM now plans to double the RT's performance at a constant price every 12 to 18 months of its foreseeable future.

Despite these holes, there are a few happy commercial RT users who are assured that IBM should be more aggressive in their markets and is becoming so.

"IBM's just started pushing the RT in this area," says Chris Irwin, technical consultant for WCI, Washington, D.C. His company recently agreed to handle the RT as a member of IBM's Marketing Assistance Program. Irwin's first RT customer will use it as the host for a financial database as well as for word processing. "This is definitely not what you'd consider a standard technical application," he notes.

Another RT commercial user is Jim Robinson, director of marketing administration for the Farm Bureau Insurance Group, the Lansing-based affiliate of the Michigan Farm Bureau. This agency has roughly 100 field installations with RT systems processing policies and claims as well as performing general office applications.

"I've told IBM that they were missing the boat," says Robinson. "From our vantage point they have a commercial system here."

Despite his generally high regard for the RT and IBM's service, Robinson believes the pool of available software needs to be improved. For example, the Farm Bureau has found no good spreadsheet package for the RT, nor any standard offerings for the insurance industry.

AIX to the Rescue?

The push by IBM to get AIX, its version of Unix, on other platforms should help the software shortage. For example, last month AIX became available on high-end PS/2 models. IBM's Goldberg agrees that should help the number of software offerings for the RT. "The PS/2 and the RT are reasonably complementary today and will become more so over time," he says. "Clearly, AIX as a common operating system and the move to a common I/O base in

Big Blue's Technical Blues

IBM trails the pack in technical workstations

Company	Units	1987 Market %
Sun	34,100	29.6
Apollo	24,000	20.8
Digital	24,000	20.8
Hewlett-Packard	17,000	14.7
Silicon Graphics	5,750	5.0
Intergraph	4,060	3.5
IBM	3,400	2.9

Micro Channel . . . will allow complete transparency at the AIX call level."

The promise that the RT enhancements could be moved to other IBM systems in the future was a big plus for Henry Maxwell, senior staff engineer for Harnischfeger Engineers Inc., a division of materials-handling giant Harnischfeger Industries, Milwaukee. The company used to be more involved with Digital Equipment Corp. systems, but today it uses the RT as part of a system to control forklift operations.

"Our basic intent is not to be in bed with the RT," says Maxwell. "Rather, it is to tell customers they can use what [hardware] they want."

Nonetheless, Maxwell adds that he has been pleasantly surprised by the RT's functionality. IBM has been marketing the RT exclusively as a CAD/CAM box, and in factories it has been pushing the 9370 minicomputer networked with PS/2 systems—both of which miss the mark, he believes. "What's missing in IBM's present factory scenario is the centerpiece: a real-time control computer," he says. "That can be the RT."

Missing the Engineering Market

IBM's been even further off the mark in the technical marketplace. There are no major RT oems in the CAE market. While Big Blue clearly defines the RT as an engineering, technical workstation, the system has not done well when compared to its PC and PS/2 brethren and a host of more popular systems from Sun Microsystems and Apollo. San Jose-based market research house Dataquest Inc. estimates that in 1987 IBM shipped 3,500 RTs for technical applications compared with Sun's 32,000 and Apollo's 23,000. An additional 3,500 RTs were shipped for nontechnical applications, such as those found in the financial and banking industries.

"To the best of my knowledge, no one in my area is using the RT," says Nilo Niccolai, manager of Hughes Aircraft Co.'s corporate VLSI support organization, Long Beach, Calif. Instead, the company has settled on Sun and Apollo as workstation platforms. "At one point, I think it was a question of raw power," and the RT's lack thereof, Niccolai says. "Now, people realize it is one of software." None of Hughes's major CAE and CAD software suppliers, such as Mentor Graphics Corp., Beaverton, Oreg., support the RT.

One technical software company that did support the RT has reconsidered its position. BBN Software, Cambridge, Mass., recently decided to halt active marketing of the RT version of its RS/1 engineering data analysis product. "Frankly, the sales performance of the RT has been pretty disappointing," says BBN marketing vp Thomas Kush, who places sales figures for the RT version of RS/1 at "fewer than 100." He reels off a list of reasons the RT has been constrained: "Distribution channels, graphics, software availability, performance of earlier version, pricing. Any one of those a company can overcome, but all five just isn't right."

Big Blue is coming around on some of these issues. First releases of the system were without high-resolution graphics and key networking capability such as Ethernet connectivity. These gaps have been steadily filled in, culminating last July in three new models whose main features were faster throughput and greatly needed improved floating point performance.

□ THE MAIN CONSTRAINT OF THE RT AS IT NOW EXISTS IS ITS PC AT BUS STRUCTURE.

But there's still more to be done. In the first quarter of 1989, it is anticipated that IBM will continue along the lines it took this summer and introduce new versions with higher throughput and a new bus architecture.

The main constraint of the present RT is its AT bus structure, even though IBM says it runs at speeds up to four times that of a standard AT. Within Harnischfeger, engineers have found that they can do RT disk I/O to the mainframe over a token ring network faster than the RT can perform disk operations internally. Going to a 32-bit bus structure will significantly increase performance, Maxwell says. The most likely scenario calls for IBM to use the same Micro Channel bus used in the PS/2.

Has IBM Held Back the RT?

This is part of the RT's slow and steady improvement. Customers have not flocked to the system yet, but some believe there is still hope. Clare Fleig, systems research director for IBM watchdog International Technology Group, Los Altos, Calif., feels IBM has held back on the RT so as not to interfere with sales of other products. Yet, Fleig says there are indications that the RISC processor central to the RT is finding its way into other mainstream product lines such as the AS/400.

As the RT RISC technology melds into other families, the RT is melding more into IBM's personal computer strategy. One interesting signal of IBM's intentions was the introduction earlier this year of the 6152 academic system, an 80286-based microcomputer with a RISC chip on its motherboard. Goldberg says IBM has no plans to create an RT or RISC coprocessor for other commercial products such as the 9370 or AS/400, but, over time, it has altered its RT PC coprocessor strategy. IBM no longer offers a separate DOS coprocessor board for the RT. Instead, the latest versions of AIX include code that simulates the AT. No similar capability for the OS/2 is yet available.

IBM has wrestled over whether to differentiate its two lines of microcomputers or merge them. "Sure, there's a lot of overlap with the PS/2 and the RT running AIX," says Stephen Hill, director of product marketing for Informix, which gets roughly 2.5% of its business from RT software products. He believes that if IBM were truly to differentiate the two lines, one possible way would be to release a multiprocessor version of the RT system.

A New Song from IBM?

That's been a popular RT rumor for some time, but many are doubtful that IBM would produce a multiprocessor RT offering. IBM clearly has the technical know-how to make a superpowered RISC-based system. If it does so, however, it risks knocking the socks off other IBM systems that boast higher margins for the company. This could explain its rather cautious approach so far with the RT.

Yet, as IBM sees other RISC vendors doing well, it may be changing its tune. The RT architecture still has a lot of growth in it, according to Goldberg. "It clearly could include looking at multiple processor versions of RISC processors," he says. "I don't see any constraints within IBM. We're spending as much on RISC-based products as we are on Intel-based products."

Andrew Allison, editor of *RISC Management*, a Los Altos Hills, Calif.-based newsletter, believes that marketing forces within Big Blue are holding back the technology folks. "Can you imagine what a multiprocessor system would do to IBM's base?" he asks. "Their traditional margins on minis and mainframes just would not be supportable. The RT products that IBM has introduced do not by any means take advantage of their processor."

It's not just performance that IBM needs to work on concerning the RT. If IBM continues to scup up the RT's performance, it still must deal with three years of inertia and a mediocre reputation. That's tough, even for a marketing giant.

Automating The Japanese Office

Japanese corporations trail the West in applying new office systems technology. Keyboard-phobic Japanese managers, cultural tradition, and the slow process of establishing standards in desktop systems are limiting OA use.

BY JOHN BOYD

Yoshihisa Akai is an IS manager with a major cultural obstacle to overcome. As the director of the strategic analysis group at Japan Air Lines (JAL) in Tokyo, he has spent the last few years building up a $3.5 million database system for JAL's executives, including the board of directors and the president. The system provides vital decision-making information to help JAL pilot its way through the competitive dogfights of the international airline business. "It has now become indispensable to use this information in planning strategies," notes Akai.

Despite their active support for this high-tech investment, JAL's senior managers are reluctant to access that vital data themselves. Virtually all the information is still delivered to them in hardcopy form through intermediary staff.

This is not unusual in Japan. Direct management involvement with office automation is still rare in most large Japanese organizations.

"In terms of pure technology, the U.S. and Japan are about the same, but in applying that technology, the U.S. is more advanced, perhaps as much as five years," comments Shuhei Mitome, an analyst at Arthur D. Little Japan Inc. in Tokyo.

The U.S. got off to a good start in the early 1980s when the growing number of word processing users and suppliers greeted the pc revolution with open arms. Japan, however, had first to deal with the awesome task of automating *kanji*, the Chinese characters that are used in the complex Japanese writing system, before it could advance.

□ DIRECT INVOLVEMENT BY MANAGEMENT WITH OFFICE AUTOMATION IS STILL RARE IN MOST LARGE JAPANESE COMPANIES.

To be considered literate, a Japanese must learn at least 2,000 *kanji* characters, many composed of between 10 and 20 strokes. That compares to a maximum of only four strokes in the 26 letters of the Roman alphabet. It is this complexity that has made *kanji* difficult to reproduce on small screens and in business documents.

Progress has been made. Today, Japanese users enter information via a keyboard based on either Roman letters or phonetic syllabaries called *kana*, which the computer then converts into *kanji*. While some complain that input is slow, most Japanese believe the technical problems are a thing of the past.

The result is that the spread of word processors (*waapuro*), which began around 1984, shows no signs of diminishing. Notes Mitome, "While sales of dedicated word processors decline in the U.S., they're continuing to increase here."

Nevertheless, there is still widespread management resistance to using keyboards. With few exceptions, computer input is regarded as the job of a trained

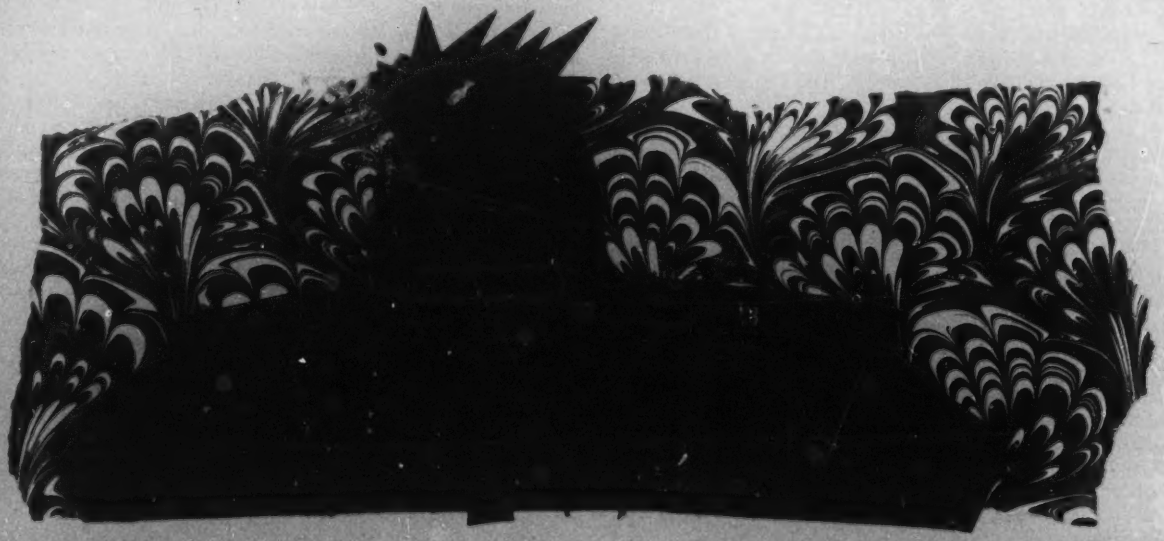


Illustration by Peter Kuper

worker, usually one of the so-called office ladies who grace Japanese offices.

"The OA [office automation]-ization of Japan is still mostly an entry operation by women who are trained to input data," says Linda Sherman, project director for the Japan Market Research Bureau Inc. in Tokyo. "In the U.S., a lot of people are making good use of their personal computers through spreadsheets and word processing; they're creating, moving information around in a document until it suits them. In Japan, word processing still means creating a document by hand and having a secretary produce 'pretty print' on a word processor."

What's Wrong with a Quill Pen?

This is less surprising when it's understood that the typewriter was never used as widely in Japan as in the West. Until recently, all documents, except a few pertaining to government and legal matters, were handwritten. This tradition, deeply rooted in an artistic admiration for the handwritten document in Japanese culture, explains the popularity of the facsimile machine, by far the most commonly used business machine in Japan, because it is better suited to customary methods.

"The fax is one of the gadgets of the information society," says Robert Ballon, professor of economics at Tokyo's Sophia University. "The Japanese may not be using e-mail as much, but given that they practically sleep with a fax on their laps, well, you just add a new button to the fax and you have e-mail. That is only a technical twist."

In an effort to overcome the keyboard phobia among Japanese managers, many companies have tried to simplify the task of inputting *kanji*. At Toshiba in Tokyo, systems personnel have devised plastic keyboard overlays for executive workstations that mark the keys according to function and are tailored to the individual executive's department.

□ IN THE UNITED STATES, A LOT OF PEOPLE ARE MAKING GOOD USE OF PERSONAL COMPUTERS; IN JAPAN, WORD PROCESSING STILL MEANS CREATING A DOCUMENT BY HAND.

Akai at JAL, meanwhile, hopes to introduce terminals specially tailored for computer-shy management next year so that they can access his database information directly. "This will cost an additional ¥200 million or ¥300 million. I will also need one or two more staff—and they are particularly hard to get," he says. JAL plans to follow the example set by the Tokyo Electric Power Co., which uses a two-key keyboard and a numeric keypad to select menued items on a screen.

While it may take time to break down the barriers between JAL's management and the keyboard, Akai has noticed that other aspects of traditional Japanese management style have already been affected by the introduction of office systems linked to the information database.

"In the past, management has often been by intuition and *hara* [gut feeling]," Akai says, "but with the introduction of this system, I hope it will change more to management based on actual and accurate information. And I'm beginning to see such a change."

What's more, access to the system has helped staff assess changes faster and better focus their activities. "For instance," he reports, "if we introduce a new fare, we can know the results in a month or so, whereas before it took at least a month longer."

Whereas the sales staff once had the simple goal of "selling more," Akai continues, they are now using the newly available information "to make more profit"

A Network of Laptops At Toshiba's Head Offices

Naoto Yokoyama, like many managers in the internal information and systems division at Toshiba's headquarters in Hammatsucho, Tokyo, uses a J3100 laptop every day for an office application that is still exceedingly uncommon in Japan—e-mail.

"While fax is used much more than e-mail today, the use of e-mail will increase because of its advantages," says Yokoyama. He can check for mail four or five times a day, broadcast messages, and receive a confirmation of receipt.

Yokoyama hooks into the 100Mb optical fiber LAN that runs around the 40-story building. Linked to this are 10Mb coaxial systems that bring distributed data processing to each department. "This network is also connected to other Toshiba offices, plants, and buildings throughout Japan via our group's value-added network," he explains.

This network has been a major success at the Toshiba headquarters. All eight senior managers in the IS division are using e-mail to varying degrees.

One such manager is Kenjiro Hayashi, who has offices in both the telecommunications and planning departments, and so praises the portability of his laptop. Hayashi is presently gathering information in preparation for planning a global communications network for Toshiba.

He demonstrates on his own laptop how he uses Lotus 1-2-3 to list, in any order, overseas branch and sales offices (600 locations in the U.S. alone) according, for example, to the kind of computers they use, whether they have dedicated or public fax, or just by their address. "I used this to analyze the traffic flow between cities here in Japan to find out where we should use private leaselines. It can save us a lot of money," says Hayashi.

On an average day, Hayashi spends the first 30 minutes checking his e-mail. "I may have between five and 10 messages and two or three will request a response," he says.

The combination of laptop and network access has made another major difference to the way he does his work—he inputs all of his own data. "Before, I would ask an 'Office Lady' to type for me. Now, I do it all myself and can make new documents from what I've saved on the hard disk. More people know what I'm thinking, and I'm getting more done."

But Hayashi quickly admits that some managers even in his division still fear the keyboard. In the case of Toshiba's senior executives, the company has found a partial answer to keyboard phobia by developing a plastic template that sits over the keyboard and indicates key functions. "By pushing just one or two keys," says Hayashi, "an executive can get important business information at any time."

If senior managers in Japanese corporations are going to be persuaded to use office systems themselves, this kind of combined portability, network access, and user interface may be the answer to many Japanese IS managers' problems.

by concentrating their energies on more lucrative routes.

These glimmers of progress aside, there are still other problems facing IS managers hoping to implement widespread office systems in Japanese corporations. Incompatibility among desktop systems is a particular problem. For example, even though NEC Corp. grabbed over 80% of the 16-bit pc market with its 9800 series (something even IBM in the U.S. never managed to equal), it has not experienced the kind of high-volume corporate purchases typically seen in the U.S. Most larger companies have IBM mainframes or plug-compatibles made by Fujitsu and Hitachi, and obviously look first for pc and terminal compatibility with their big machines.

No Pc Operating System Standard

This failure to reach a common standard in the Japanese pc world extends to operating systems. Although every major manufacturer has decided on Microsoft's MS/DOS for its pc operating system, each has adapted the OS to suit its own ends and peripheral needs. "In personal computers nothing talks to anything yet," says the Japan Market Research Bureau's Sherman. "When you ask the Japanese why, they mostly say it's a matter of pride. Every manufacturer wants to have its own machine."

According to Susumu Furukawa, president of Microsoft Corp.'s Japanese subsidiary, this lack of an industry standard is the reason it took NEC five years to sell 1 million 9800 personal computers. "I worry about the growth rate of pcs in Japan," says Furukawa, who is trying to rally the industry to support a common MS/DOS standard, compatible with the classic IBM PC, called AX (Architecture Extended). "It's only 11% versus more than 30% in the U.S."

Even when the Japanese do get together and eventually agree on a standard, it may be a case of too little, too late. "One of the problems with these group standards is that by the time they put it together, it's old—like MSX," notes Sherman, who sees this slowness to react as the natural outcome of the Japanese tradition of consensus in decision-making, called *nemawashi*.

Without a clear standard, software publishers must spread their resources, which hampers quality. Some observers believe indigenous Japanese business software is not up to the caliber U.S. managers have come to expect.

"Japanese packaged software is not easy to handle," says ADL's Mitome. "Data transfer from one application to another isn't easy or well structured. Other areas [such as] manuals are poor too."

☐ ANOTHER PROBLEM FACING JAPANESE MANAGERS HOPING TO IMPLEMENT WIDESPREAD OFFICE SYSTEMS IS THAT OF DESKTOP INCOMPATIBILITY.

Yet at least packaged software is available for the business pc user. In fact, a number of the popular business packages are simply Japanese versions of best-selling U.S. software from companies such as Lotus, Microsoft, and Ashton-Tate.

When it comes to more powerful business systems, *ofucon*, or office computers (IBM System/3X-class machines), firms insist on customized software. "Software for *ofucon* is almost entirely custom-made because the Japanese refuse to adopt business methods, and instead insist on adapting the system to the way they do things manually," says Sherman. "So, software is still unnecessarily expensive, which hampers real proliferation of those systems."

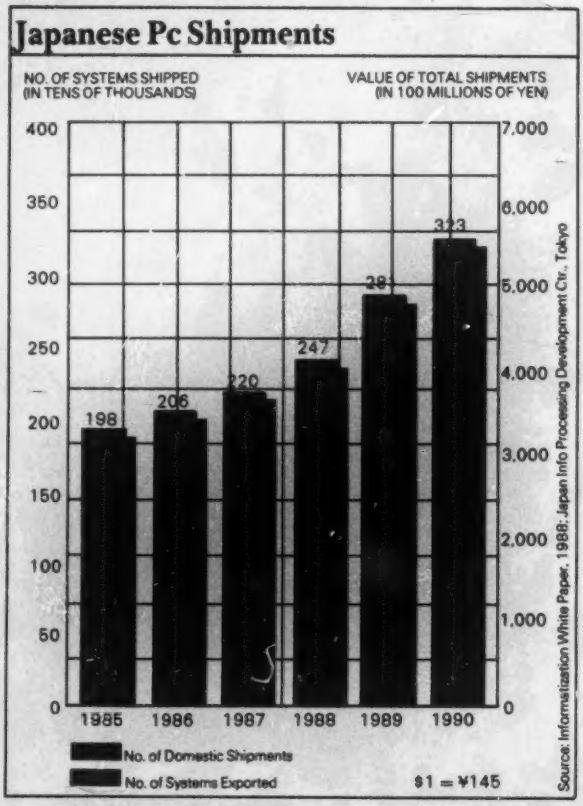
Nevertheless, things are hardly standing still. "The face of the Japanese office has changed dramatically," says Tom Zengage, director of research consultants International Business Information in Tokyo. "When I moved here 10 years ago, it was a different place: paper-filled offices with the odd *kanji* typewriter. Now, OA is here to stay."

But Zengage also sees the Japanese lagging behind the U.S. "You can still go through lots of offices where computers are used as decoration. Even at electronics makers, you can find computers unplugged . . . but they are catching up."

One analyst who believes Japan has already caught up is Tetsuo Fukuyama, a partner with Price Waterhouse in Tokyo: "Except in e-mail, where inputting is a problem, we're no longer really behind. If you have an open office, you don't need many terminals or pcs; you can share them."

Sophia University's Ballon thinks the Japanese may not have caught up in the race to automate the office, but, he asks, "Generally speaking, are we so much better off in the West? That I question, because even in the West we are still quite inept at using all the available numerical data."

Ballon adds a warning for U.S. managers tempted to underestimate the Japanese. "Look at all the work of [quality control] circles here on cost reductions. Certainly, on the production side, this has brought about amazing results. Why shouldn't this same capacity work in the office? To use [the OA gap] as a sign of superiority of the West over Japan would, I think, be a very childish kind of reasoning."



John Boyd is a freelance journalist in Yokohama, Tokyo. He has lived in Japan for 15 years and has written for numerous business and technology publications in Europe, the U.S., and Japan.

Chart by Catherine Francis